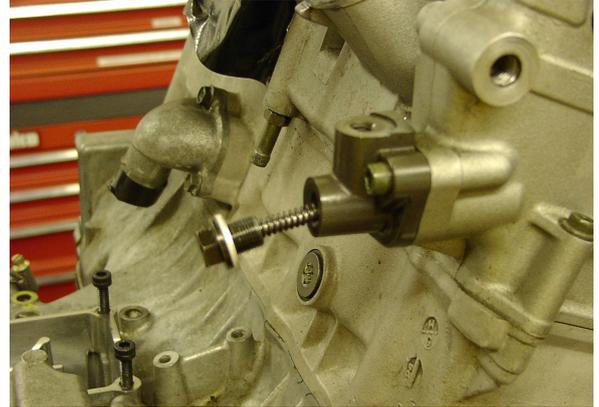
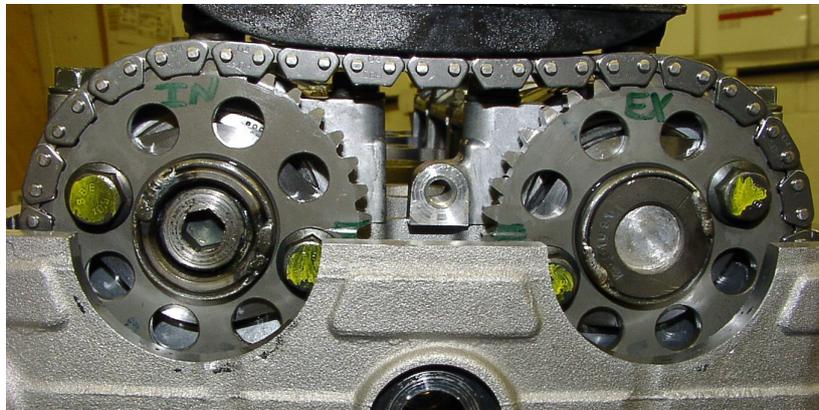


## Hayabusa Cam Timing instruction sheet- Vernier pulley equipped Engines only

1. Set engine to TDC
2. Remove timing chain tensioner and the top chain guide.



3. It is advisable to rotate the crank slightly in the reverse direction to drop the pistons down the bores to allow plenty of clearance for the valves when first installing the cams
4. Fit the Inlet cam first, ensuring the scribed mark on the vernier pulley (if pre-set by SBD) is parallel with the top of the head-it is necessary to apply assembly lube to the cam lobes and bearing journals.



5. Next fit the cam carrier and torque down to the correct setting-note tighten each bolt a little at a time to equalise the pressure over the cam and carrier.

6. Fit the exhaust cam, with the cam sprocket attached it is necessary to hook the sprocket under the chain first, then lay it into the cam journals whilst ensuring the bearing race on the front of the cam locates into the securing clip-it is necessary to apply assembly lube to the cam lobes and bearing journals.



7. Next fit the cam carrier and torque down to the correct setting-note tighten each bolt a little at a time to equalise the pressure over the cam and carrier.

8. Again align the setting marks on the camshaft, if necessary the chain can be lifted above the sprocket slightly allowing the cam to be positioned correctly.

9. With both tensioners removed it is possible to slowly rotate the crank forwards by lifting the chain up slightly on the cam pulleys- the chain will just about pass over the top.

10. Once the crank is positioned at TDC with the cams aligned correctly it is time re-fit the cam chain tensioner. It is necessary to retract the ratcheted leg of the tensioner to, on most models this is done by simply lifting the ratchet and pushing the leg back but on some models a special tool is required.



11. Now re-fit the top cam chain guide.



12. The engine can now carefully be rotated in the normal direction (anti-clockwise when viewed from the generator end) at least two complete revolutions. ***Pay particular attention to any resistance felt when rotating the engine encase this is the valves touching the pistons.***

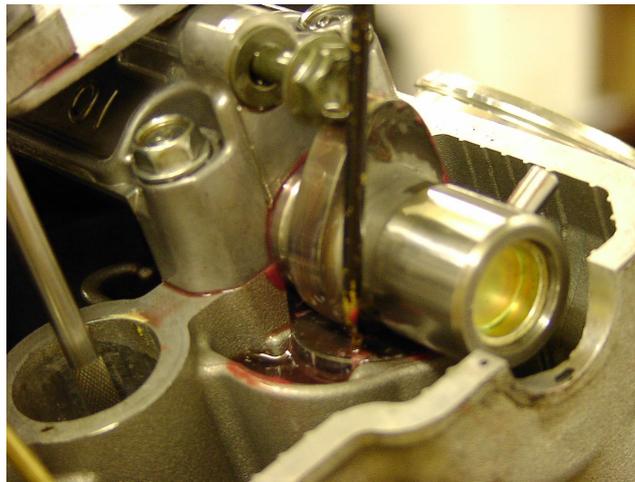
13. Now fit your DTI measuring equipment, this needs to be done on the back of the engine, as these are the only followers accessible.



An angled DTI pointer is required to get onto the cam follower



14. Rotate the engine and as the valves close on the followers that you are measuring the DTI's can be zeroed when the cam lobe is completely pointing away from the follower.



15. Continue to rotate the engine checking that the DTI's return to zero, if not re-set them. Stop the engine at precisely TDC and check the timing for each cam, if an adjustment is required then make it as required, tighten the cam sprocket top bolt and rotate the engine again, continue until cam timings are correct.

16. Once finished rotate engine to gain access to the lower vernier sprocket bolt hole on each cam, apply loc-tite (635/638), fit the bolt and torque as specified. Rotate engine again to gain access to the other bolts and repeat the above process.

17. Check the timing chain tension is ok.

18. Now do a final check of the cam timings, if all is ok remove equipment and re-fit oil pipes and bolts etc.

### **IMPORTANT INFORMATION**

- Suitable sealant such as SUZUKI BOND 1207B should be used on semi-circle parts of cam cover gasket.
- Cam lube or assembly paste such as Redline assembly lube should always be used when fitting camshafts.
- **It is vital to apply a suitable loc-tite on the cam sprocket vernier pulley bolts.**

## TORQUE SETTINGS

Vernier pulley bolts ( <b>635loctite</b> )	- 15lb/ft
Camshaft journal holder bolts	- 7lb/ft
Chain tensioner housing bolts	- 7lb/ft
Hex headed bolt on tensioner	- 6lb/ft
Oil pipe bolts	- 7lb/ft
Top chain guide bolts	- 7lb/ft
Cam cover bolts	- 10lb/ft

Cam Profile	Cam No	Duration @ 1mm Cam Lift Lift @ TDC	Cam Timing	Valve Clearance	Additional Notes
<b>CM-BUSA-1R</b>  2 STD Cams required	IN=D1091	248 Deg@ 1mm 9.30mm Cam Lift 2.30mm @ TDC	@108deg	0.20mm (0.008")	Standard springs & caps, but recommend titanium valve caps <b>VLC-BUSA-01T</b>
	EX=D93	234 Deg@ 1mm 8.20mm Cam Lift 1.66mm @ TDC	@105deg	0.20mm (0.008")	
<b>CM-BUSA-03</b>  2 Steel Cams or 1 Steel and STD inlet	IN=D1182	260 Deg@ 1mm 9.70mm Cam Lift 2.85mm @ TDC	@108 deg	0.20mm (0.008")	Standard springs & caps, but recommend titanium valve caps <b>VLC-BUSA-01T</b>
	EX=D1091	248 Deg@ 1mm 9.30mm Cam Lift 2.50mm @ TDC	@105 deg	0.20mm (0.008")	
<b>CM-BUSA-13R2</b>  For Busa Gen2 2008 on - 2 standard cams required	IN=D1182	260 Deg@ 1mm 9.70mm Cam Lift 2.85mm @ TDC	@108 deg	0.20mm (0.008")	Standard springs & caps, but recommend titanium valve caps <b>VLC-BUSA-01T</b>
	EX=D1091	248 Deg@ 1mm 9.30mm Cam Lift 2.50mm @ TDC	@105 deg	0.20mm (0.008")	



SBD Motorsport Ltd  
Unit 15, Red Lion Business Park, Red Lion Road, Surbiton, Surrey. KT6 7QD  
Tel: 020 8391 0121  
Email: [sbdmotorsport@btconnect.com](mailto:sbdmotorsport@btconnect.com)  
Website: [www.sbdmotorsport.co.uk](http://www.sbdmotorsport.co.uk)



SBDMotorsport



sbdevelopments



sbdmotorsport